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U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
MM	AA 5, 759, 811	Epstein et al.	435	69.1	11/13/96
	AB 5, 223, 408	Goeddel et al.	435	69.3	07/11/91
	AC 4, 456, 687	Howard Green	435	241	12/01/80
	AD 5, 789, 543	Ingham et al.	530	350	12/30/93
	AE 5, 844, 079	Ingham et al	530	350	12/14/94
	AF 5, 585, 087	Lustig et al.	424	9.2	06/08/94
	AG 5, 837, 538	Scott et al.	435	325	10/06/95
	AH 5, 747, 507	Ikegaki et al.	514	312	08/10/93
	AI 5,643, 915	Andrulis, Jr. et al.	514	279	06/06/95
	AJ 5, 519, 035	Maiese et al.	514	309	07/02/93
	AK				

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						YES	NO
MM	AL WO 90/02809	3/22/90	PCT	C 12P	21/00		
	AM WO 92/15679	9/17/92	PCT	C 12N	15/10		
	AN WO 94/28016	12/08/94	PCT	C 07K	13/00		
	AO WO 95/23223	08/31/95	PCT	C 12N	15/00		
	AP WO 95/18856	07/13/95	PCT	C 12N	15/12		
	AQ WO 96/09806	04/04/96	PCT				
	AR WO 96/11260	04/18/96	PCT	C 12N	5/00		
	AS WO 96/16668	06/06/96	PCT	A 61K	38/17		
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	AW WO 98/12326	03/26/98	PCT	C 12N	15/12		
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	AZ WO 98/30234	07/16/98	PCT	A 61K	38/18		
	BA WO 98/30576	07/16/98	PCT	C 07K	17/100		
	BB WO 98/35020	08/13/98	PCT	C 12N	5/00		

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V3	BD	WO 99/00403	01/07/99	PCT	C 01	21/02	
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	BP	Angier, N., " Biologists find key genes that shape patterning of embryos", <i>New York Times</i> , Jan. 11, 1994, C-1.
	BQ	Basler, K. and G. Struhl, "Compartment boundaries and the control of <i>Drosophila</i> limb pattern by Hedgehog protein", <i>Nature</i> 368 :208-214 (1994).
	BR	Basler, K. et al., "Control of cell pattern in the neural tube: Regulation of cell differentiation by <i>dorsalin-1</i> , a novel TGF β family member", <i>Cell</i> 73 :687-702 (1993).
	BS	Bass, S. et al., "Hormone phage: An enrichment method for variant proteins with altered binding properties", <i>PROTEINS: Structure, Function, and Genetics</i> 8 :309-314 (1990).
	BT	Bejsovec, A. and E. Wieschaus, "Segment polarity gene interactions modulate epidermal patterning in <i>Drosophila</i> embryos", <i>Development</i> 119 :501-517 (1993).
	BU	Biern, M., "Homeotic genes and positional signalling in the <i>Drosophila</i> viscera", <i>TIG</i> 10 :22-26 (Jan. 1994).
	BV	Bitgood, M. and A. McMahon, "Hedgehog and Bmp genes are coexpressed at many diverse sites of cell-cell cnteraction in the mouse embryo", <i>Dev. Biol.</i> 172 (1):126-138 (1995).
	BW	Blair, S. S., "Hedghog digs up an old friend ", <i>Nature</i> , 373 :656-657 (23 Feb. 1995).
	BX	Brand-Saberi, B. et al., "The ventralizing effect of the notochord on somite differentiation in chick embryos", <i>Anat. Embryol.</i> 188 :239-245 (1993).
	BY	Brockes, J., "We may not have a morphogen", <i>Nature</i> 350 :15 (1991).
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<i>NY</i>	CE	Concordet, J. and P. Ingham, "Developmental biology. Patterning goes sonic", <i>Nature</i> 375 (6529):279-280 (May 1995).
	CF	Curry, et al., "Sequence analysis reveals homology between two proteins of the flagellar radial spoke", <i>Mol. Cell. Biol.</i> 12 :3967-3977 (1992).
	CG	Davidson, E. H., "How embryos work: a comparative view of diverse modes of cell fate specification", <i>Develop.</i> 108 :365-389 (1990).
	CH	Davis, A. P. and M. R. Capecchi, "Axial homeosis and appendicular skeleton defects in mice with a targeted disruption of <i>hoxd-1</i> ", <i>Devel.</i> 120 :2187-2198 (1994).
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	CM	Echelard, Y. et al., "Sonic hedgehog, a member of a family of putative signaling molecules, is implicated in the regulation of CNS polarity", <i>Cell</i> 75 :1417-1430 (1993).
	CN	Ekker, S. et al., "Distinct expression and shared activities of members of the hedgehog gene family of <i>xenopus laevis</i> ", <i>Devel.</i> 121 (8):2337-2347 (Aug. 1995).
	CO	Ericson, J. et al., "Sonic hedgehog induces the differentiation of ventral forebrain neurons: a common signal for ventral patterning within the neural tube", <i>Cell</i> 81 (5):747-756 (June 1995).
	CP	Ettelaie, C. et al., "The effect of lipid peroxidation and lipolysis on the ability of lipoproteins to influence thromboplastin activity", <i>Biochim. Biophys. Acta</i> 1257 (1):25-30 (June 1995).
	CQ	Fahrner, K. et al., "Transcription of <i>H-2</i> and <i>Qa</i> genes in embryonic and adult mice", <i>EMBO J.</i> 6 :1265-1271 (1987).
	CR	Fallon, J. F. et al., "FGF-2: Apical ectodermal ridge growth signal for chick limb development", <i>Science</i> 264 :104-107 (1994).
	CS	Fan, C. et al., "Long-range sclerotome induction by sonic hedgehog: Direct role of the amino-terminal cleavage product and modulation by the cyclic AMP signaling pathway", <i>Cell</i> 81 :457-465 (5 May 1995).
	CT	Fietz, M. et al., "The hedgehog gene family in Drosophila and vertebrate development", <i>Devel. (Suppl.)</i> :43-51 (1994).
	CU	Forbes, A. J. et al., "Genetic analysis of hedgehog signaling in the <i>Drosophila</i> embryo", <i>Devel. (Suppl.)</i> :115-124 (1993).
	CV	Francis, P. H. et al., "Bone morphogenetic proteins and a signaling pathway that controls patterning in the developing chick limb", <i>Devel.</i> 120 :209-218 (1994).
	CW	Gallop, M. et al., "Applications of combinatorial technologies to drug discovery. 1. Background and peptide combinatorial libraries", <i>J. Med. Chem.</i> 37 (9):1233-1251 (1994).
	CX	Gérard, M. et al., "Structure and activity of regulatory elements involved in the activation of the <i>Hoxd-11</i> gene during late gastrulation", <i>EMBO J.</i> 12 :3539-3550 (1993).
	CY	Gurdon, J. B., "The generation of diversity and pattern in animal development", <i>Cell</i> 68 :185-199 (1992).
	CZ	Halpern, M. E. "Induction of muscle pioneers and floor plate is distinguished by the zebrafish <i>no tail</i> mutation", <i>Cell</i> 75 :99-111 (1993).
	DA	Gustin, K. et al., "Characterization of the role of individual protein binding motifs within the hepatitis B virus enhancer 1 on X promoter activity using linker scanning mutagenesis", <i>Virology</i> 193 :653-660 (1993).
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<i>Woj</i>	DD	Hammerschmidt, M. et al., "The world according to hedgehog", <i>T/G</i> 13(1):14-21 (1997).
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	DG	Harmon, C. S. et al., "Evidence that activation of protein kinase A inhibits human hair follicle growth and hair fibre production in organ culture and DNA synthesis in human and mouse hair follicle organ culture", <i>British J. Dermatol.</i> 136:853-858 (1997).
<i>PAT</i> <i>Woj</i>	DH	Hatta, K. et al., "The cyclops mutation blocks specification of the floor plate of the zebrafish central nervous system", <i>Nature</i> 350:339-341 (1991).
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	DJ	Heemskerk, J. and S. DiNardo, "Drosophila <i>hedgehog</i> acts as a morphogen in cellular patterning", <i>Cell</i> 76:449-460 (1994).
<i>Woj</i>	DK	Hidalgo, A. and P. Ingham, "Cell patterning in the <i>Drosophila</i> segment: spatial regulation of the segment polarity gene <i>patched</i> ", <i>Devel.</i> 110:291-301 (1990).
	DL	Hooper, J. and M. Scott, "The <i>Drosophila patched</i> gene encodes a putative membrane protein required for segmental patterning", <i>Cell</i> 59:751-765 (1989).
	DM	Hynes, R. O., "Integrins: A family of cell surface receptors", <i>Cell</i> 48:549-554 (1987).
	DN	Hynes, R. O., "Induction of midbrain dopaminergic neurons by Sonic hedgehog", <i>Neuron</i> 15(1):35-44 (July 1995).
	DO	Ingham, P. W., "Signaling by hedgehog family proteins in Drosophila and vertebrate development", <i>Curr. Opin. Genet. Dev.</i> 5(4):478-484 (Aug 1995).
	DP	Ingham, P. W., "Hedgehog points the way", <i>Current Biology</i> 4(4):347-350 (1994).
	DQ	Ingham, P. W., "Localized <i>Hedgehog</i> activity controls spatial limits of wingless transcription in the <i>Drosophila</i> embryo", <i>Nature</i> 366:560- 562 (1993).
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	DT	Izpísúa- Belmonte, J. -C. et al., "Expression of the homeobox <i>Hox-4</i> genes and the specification of position in chick wing development", <i>Nature</i> 350:585-589 (1991).
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	ED	Kalderon, D., "Morphogenetic signalling. Responses to hedgehog" <i>Curr. Biol.</i> 5 (6):580-582 (June 1995).
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	EG	Kornfeld, R. and S. Kornfeld, "Assembly of asparagine-linked oligosaccharides", <i>Ann. Rev. Biochem.</i> 54 :631-664(1985).
	EH	Krauss, S. et al., "Expression of the zebrafish paired box gene <i>pax/zf-b</i> during early neurogenesis", <i>Devel.</i> 113 :1193-1206 (1991).
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	EN	Lee, S. J. "Expression of growth/ differentiation factor1 in the nervous system: Conservation of a bicistronic structure", <i>Proc. Natl. Acad. Sci. USA</i> 88 :4250-4254 (Year).
	EO	Levin, M. et al., "A molecular pathway determining left-right asymmetry in chick embryogenesis", <i>Cell</i> 82 (5):803-814 (Sept. 8, 1995).
	EP	Li, W. et al., "Function of protein kinase A in hedgehog signal transduction and drosophila imaginal disc development", <i>Cell</i> 80 (4):553-562(Feb. 1995).
	EQ	Lopez-Martinez, A. et al., "Limb-patterning activity and restricted posterior localization of the amino-terminal product of sonic hedgehog cleavage", <i>Curr. Biol.</i> 5 (7):791-796 (July 1995).
	ER	Lumsden, A. and A. Graham, "Neural patterning: A forward role for hedgehog", <i>Curr. Biol.</i> 5 (12):1347-1350 (Dec. 1995).
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	EV	Marigo, V. et al., "Biochemical evidence that <i>patched</i> is the hedgehog receptor", <i>Nature</i> 384 :176-179 (1996).
	EW	Maccabe, J. A. and B. W. Parker, "The target tissue of limb-bud polarizing activity in the induction of supernumerary structures", <i>J. Embryol. Exp. Morph.</i> 53 :67-73 (1979).
	EX	Maiese, K. et al., "Protein kinases modulate the sensitivity of hippocampal neurons to nitric oxide toxicity and anoxia", <i>J. Neurosci. Res.</i> 36 :77-87 (1993).
	EY	Marti, E. et al., "Distribution of Sonic hedgehog peptides in the developing chick and mouse embryo", <i>Devel.</i> 121 (8):2537-2547 (Aug. 1995).
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	FB	McGinnis, W. and R. Krumlauf, "Homeobox genes and axial patterning", <i>Cell</i> 68:283-302 (1992).
	FC	Mohler, J., "Requirements for <i>hedgehog</i> , a segmental polarity gene, in patterning larval and adult cuticle of <i>Drosophila</i> ", <i>Genetics</i> 120:1061-1072 (1988).
	FD	Mohler, J. and K. Vani, "Molecular organization and embryonic expression of the <i>hedgehog</i> gene involved in cell-cell communication in segmental patterning of <i>Drosophila</i> ", <i>Devel.</i> 115:957-971 (1992).
	FE	Morgan, B. A. et al., "Targeted misexpression of <i>Hox-4.6</i> in the avian limb bud causes apparent homeotic transformations", <i>Nature</i> 358:236-239 (1992).
	FF	Nakano, Y. et al., "A protein with several possible membrane-spanning domains encoded by the <i>Drosophila</i> segment polarity gene <i>patched</i> ", <i>Nature</i> 341:508-513 (1989).
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	FO	Niswander, L. and G. R. Martin, "FGF-4 and BMP-2 have opposite effects on limb growth", <i>Nature</i> 361:68-71(1993).
	FL	Niswander, L. et al., "A positive feedback loop coordinates growth and patterning in the vertebrate limb", <i>Nature</i> , 371:609-612 (13 October 1994).
	FJ	Nohno, T. et al., "Involvement of the Chox-4 Chicken Homeobox Genes in Determination of Anteroposterior Axial Polarity during Limb Development", <i>Cell</i> , Vol. 64: 1197- 1205 (March 22, 1991).
	FK	Nohno, T. et al., "Involvement of the Sonic hedgehog gene in chick feather formation", <i>Biochem. Biophys. Res. Comm.</i> 206(1): 33-39 (Jan. 1995).
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	FO	Patel, N. H. et al., "The role of segment polarity genes during <i>Drosophila</i> neurogenesis", <i>Genes & Devel.</i> 3:890-904 (1989).
	FP	Peifer, M., "The two faces of hedgehog", <i>Science</i> 266(5190):1492-1493 (Dec. 1994).
	FQ	Perrimon, N. et al., "Generating lineage-specific markers to study <i>Drosophila</i> development", <i>Develop. Genet.</i> , 12:238-252 (1991).
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	FT	Phillips, J. W. and M. H. O'Regan, "Mechanisms of glutamate and aspartate release in the ischemic rat cerebral cortex", <i>Brain Res.</i> 730:150-164 (1996).
	FU	Placzek, M. et al., "Induction of floor plate differentiation by contact-dependent, homeogenetic signals", <i>Development</i> 117: 205-218 (1993).
	FV	Placzek, M. et al., "Orientation of Commissural Axons <i>in vitro</i> in response to a floor plate-derived chemoattractant", <i>Develop.</i> 110:19-30 (1990).
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	FX	Porter, J. et al., "The product of hedgehog autoproteolytic cleavage active in local and long-range signalling", <i>Nature</i> 374(6520):363-366 (23 March 1995).
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	FZ	Rennie, J., "Super Sonic", <i>Sci. Amer.</i> p.20, (April 1994).

	GA	Riddle, R. D. et al., "Sonic hedgehog mediates the polarizing activity of the ZPA", <i>Cell</i> 75:1401-1416, (31 Dec. 1993).
	GB	Riddle, R. D. et al. "Induction of the LIM homeobox gene Lmx1 by WNT7a establishes dorsoventral pattern in the vertebrate limb", <i>Cell</i> 83:631-640 (17 Nov. 1995).
	GC	Riley, B. B. et al., "Retroviral expression of FGF-2 (bFGF) affects patterning in chick limb bud", <i>Develop.</i> 118:95-104 (1993).
	GD	Roberts, D. et al., "Sonic hedgehog is an endodermal signal inducing Bmp-4 and Hox genes during induction and regionalization of the chick hindgut", <i>Develop.</i> 121(10):3163-3174 (Oct. 1995).
	GE	Roelink, H. et al., "Floor plate and motor neuron induction vhh-1, a vertebrate homolog of hedgehog expressed by the notochord", <i>Cell</i> 76:761-775 (25 Feb. 1994).
	GF	Roelink, H. et al., "Floor plate and motor neuron induction by different concentrations of the amino-terminal cleavage product of sonic hedgehog autoproteolysis", <i>Cell/O</i> 81:445-455(5 May 1995).
JUL 07 2000	GG	Sachiko, I. et al., "Sonic hedgehog is expressed in epithelial cells during development of whisker, hair and tooth", <i>Biochem. Biophys. Res. Commun.</i> 218:688-693 (1996).
	GM	Satoh, S. et al., "Neuroprotective properties of a protein kinase inhibitor against ischaemia-induced neuronal damage in rats and gerbils", <i>Br. J. Pharmacol.</i> 118:1592-1596 (1996).
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	GJ	Sasaki, H. and B. L. M. Hogan, "Differential expression of multiple fork head related genes during gastrulation and axial pattern formation in the mouse embryo", <i>Develop.</i> 118:47-59 (1993).
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